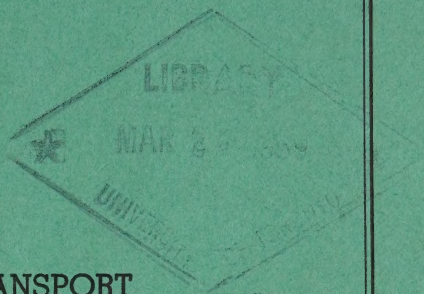


CAI T
59761

Canada. Transport, Department of



DEPARTMENT OF TRANSPORT

TRENT CANAL SYSTEM

1959

IMPROVED NATURAL WATERWAY
CONNECTING LAKE ONTARIO AND
GEORGIAN BAY

Published by Authority of the
HON. GEORGE HEES, M.P.,
Minister of Transport

THE QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA 1959

Price 25 cents

Cat. No. T26-359



CAI T
59 T 61



DEPARTMENT OF TRANSPORT

TRENT CANAL SYSTEM

1959

IMPROVED NATURAL WATERWAY
CONNECTING LAKE ONTARIO AND
GEORGIAN BAY

Published by Authority of the
HON. GEORGE HEES, M.P.
Minister of Transport

THE QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA 1959

TRENT CANAL SYSTEM, 1959

LAKE ONTARIO AND GEORGIAN BAY ROUTE

This route is a short-cut for smaller vessels between lake Ontario and Georgian Bay, an alternative to the longer route by lake Erie and Detroit. Actually the Trent canal by itself is the short-cut, but the Murray canal, though built primarily to accommodate light-laden lake shipping seeking a more protected channel through the Bay of Quinte, also provides an additional outlet to lake Ontario for Trent canal traffic and is thus geographically included in the route.

MURRAY CANAL

1882-1889—Canal built to provide 11·0 feet depth.

Length between eastern and western piers..... 5·15 statute miles

Breadth at bottom..... 80 feet

Breadth at water surface, low water, lake

Ontario 124 feet

Draught at elevation 244 of lake Ontario..... 9 feet, 6 inches

Number of locks..... None

Minimum overhead clearance..... 125 feet (Transmission line)

This lockless canal extends through the narrow isthmus of Murray and connects the western end of the Bay of Quinte with Presqu'île Bay. Its overall length including the dredged entrance channels is 7·53 miles, of which 6·80 miles is on a straight line from the Bay of Quinte entrance to a point in Presqu'île Bay where the channel swings southward.

Three swing bridges cross the canal, two for highway traffic and one for the Canadian National Railways.

TRENT CANAL

1833-1844—Three sections of this waterway, not connected, were built for 4 $\frac{1}{4}$ feet depth—about 16 miles of the middle Trent river, about 52 miles between Heely Falls and Peterborough and an extensive navigation through Chemong, Buckhorn, Pigeon, Sturgeon and Scugog lakes.

1869-1874—The Province of Ontario built a lock at Rosedale to connect Cameron lake with Balsam lake and one at Young's Point to join Stony and Katchiwano lakes. Each of these locks provided a draught of 6 feet.

1882-1887—Locks were built at Burleigh Falls, Lovesick, Buckhorn and Fenelon Falls for a draught of 6 feet, to complete the connection of all the Kawartha lakes.

1895-1907—Peterborough-Lakefield and Balsam-Simcoe divisions built for 6 feet draught, making navigation continuous from Heely Falls to lake Simcoe.

1906-1918—The remaining sections of the canal were built to their present capacities and parts of the oldest sections were rebuilt.

The term "Trent canal" is applied to that series of rivers and lakes which, by a system of dams, locks, short artificial channels and two marine railways, provides 8-foot navigation for 89 miles from lake Ontario to Peterborough and 6-foot navigation for an additional 135 miles to Swift Rapids as well as for 8 miles from Georgian Bay to Big Chute. The intervening 8 miles between Swift Rapids and Big Chute are restricted by the capacity of the marine railways at these two places to a draught of 4 feet, while the 8-foot navigation between lake Ontario and Peterborough is subject to the giving of twelve hours prior notice before entering by a vessel of more than 6 feet draught.

The canal began in a small way in 1833 with the construction of a few locks on the Trent and Otonabee rivers and on the Kawartha lakes in order to connect up the small pioneer settlements along their banks and shores. In addition to performing this vital service, these early locks and dams, assisted by an extensive system of log slides, contributed for many years to the flourishing lumber trade of the district. With the depletion of the forests, however, traffic began to settle down to a more prosaic freight-carrying trade. Good roads and motor transport made some inroads on this traffic during the nineteen twenties and thirties, but they have also brought about a very extensive development of the route as a holiday and tourist playground in which the canal facilities play no inconsiderable part.

This route follows in the main the historic Iroquois Trail, the pathway followed by the Iroquois in their deadly descents on the Huron tribesmen. It was the route followed by Champlain when he discovered lake Ontario while on a retaliatory raid with the Hurons in 1618. It may have been by this same warpath that the Iroquois returned thirty years later to annihilate the Hurons and the flourishing mission of the Jesuits amongst them.

Farther back, in post-glacial times the Algonquin river followed much the same route. This river was the outlet of lake Algonquin which then covered lakes Superior, Michigan and Huron and adjacent areas extending south-eastward across lake Simcoe and Balsam lake to near Fenelon Falls. From there the Algonquin river followed the Kawartha lakes to Stony lake but reached Rice lake through Indian river rather than by the Otonabee as at present. Rice lake was then an arm of a huge lake (called lake Iroquois by geologists) which in those times covered the present lake Ontario and a large area of adjacent country.

From the western end of the Bay of Quinte at Trenton the canal route climbs the Trent river to the eastern end of Rice lake, rising 367 feet through 18 locks. Midway along the length of Rice lake the route enters the Otonabee river which it follows upward through lock 19 into Little lake at Peterborough, 8-foot navigation terminating at the lower entrance to lock 19.

In order to avoid the series of rapids through and above Peterborough, an artificial channel four miles long has been cut through the eastern limits of the city. This waterway connects with the river again at Nassau.

In this section and right on the borders of the city is the world's highest lift hydraulic lock (Lock No. 21). Two large chambers, 140 feet long and 33 feet wide, are balanced on two huge plungers working in deep presswells in such a manner that when one chamber is up and opening into the upper reach of the canal the other is down and opening into the lower. The two chambers are so arranged that the depth of water in the descending chamber is greater than that in the ascending chamber. It is this greater depth and, consequently, greater weight of water in the descending chamber which causes the lock to operate. After the gates at the ends of the chambers and at the ends of the adjoining reaches have been closed, the simple opening of a valve between the two presswells allows the water to flow freely between them, permitting the lighter-laden ascending chamber to be lifted on its plunger by the heavier descending chamber. In this way the lift of sixty-five feet may be accomplished by a vessel in about seven minutes.

Upstream from this section of artificial, excavated channel comes the long chain of the Kawartha lakes—Katchiwano, Clear, Stony, Lovesick, Deer Bay, Buckhorn, Chemong, Pigeon, Sturgeon, Cameron and Balsam. These lakes are separated only by very short channels and the rapids or falls through which their surplus water plunges into the level below.

These lakes and the islands which dot them adorn an extensive holiday land with scenic attractions rivalling the Thousand Islands of the St. Lawrence and the Thirty Thousand Islands of Georgian Bay. The Trent Canal has made them quite as accessible to the motor launches and pleasure yachts of tourists. Their tributaries to the north reach out a hundred miles through a hundred smaller lakes equally or even more picturesque.

Balsam lake is the summit level of the canal, 598 feet above low water on lake Ontario and 260 feet above Georgian Bay.

From near the ruins of "The Fort" of fur-trading days, on the western shore of Balsam lake the canal is cut across low land to the nearest point on the Grass river, a tributary of the Talbot river. A dam on the Grass river creates a small artificial lake, called Mitchell lake. From this lake a cutting about three miles long extends to the head of Canal lake formed by the dammed waters of the Talbot river. In this cutting, near Kirkfield, the second hydraulic lock (No. 36), on the system is located. Its lift is 49 feet and it differs from the Peterborough lock in that the towers supporting the lifting chambers are of steel construction while those at Peterborough are of concrete.

The canal follows the Talbot river for about nine miles farther and then to avoid the circuitous river course follows a straight artificial channel for about three miles to lake Simcoe.

Lake Simcoe and its northern extension, lake Couchiching, are controlled by six dams on the three branches of the Severn river which drain the latter lake at Washago, its northern point. From Washago a two-mile cutting leads northerly to the Severn at the foot of lock 42.

The Severn river flows between picturesque rocky shores and has many deep sections whose raised levels are regulated by the two dams at Swift Rapids and Big Chute. These two dams are not yet provided with locks but marine railways at each make it possible for launches of not over 30,000 lbs and 4 feet draught to pass, provided they are no longer than 50 feet nor wider than 13 feet 6 inches. The difference in water level overcome by the Swift Rapids marine railway is 47 feet while at Big Chute the difference is 58 feet.

Vessels of 6 feet draught and not over 25 feet beam have access also to the reach beyond Big Chute through the lock at Port Severn, the Georgian Bay entrance to the canal.

The draught throughout the canal except for the marine railway section is 6 feet but below lock 19 vessels of 8 feet draught can be accommodated. Under present arrangements vessels drawing more than 6 feet on this section below lock 19 are required to give twelve hours' notice before entering, as some of its reaches may be drawn down below their standard elevations from time to time for power purposes.

As all locks from lake Ontario to Sparrow lake are 33 feet wide, the beam of vessels navigating this section may not exceed 32 feet 6 inches. Their maximum length, however, depends on their build. Square-built scows are limited to a length of 110 feet but vessels of standard build may be longer. They may be up to 127 feet long if their beam does not exceed 21 feet. Vessels 35 feet longer than these lengths may be accommodated up to the lower entrance to lock 19.

There are a number of branches diverging from the main channel through the lake portion of the canal, but the draught on these is variable. The most important branch is the 35-mile Scugog branch from Sturgeon lake up the

Scugog river through a lock at Lindsay and across lake Scugog to Port Perry. This has 6 feet draught up to Lindsay and 4 feet above that point at normal stages of the river.

Water supply for maintaining water levels in the section of the canal descending towards Georgian Bay is ensured by control of the lake Simcoe levels. Water levels in the section descending towards lake Ontario are maintained by water stored in the Kawartha lakes and in sixty-four other reservoir lakes strategically located on the northern tributaries of the Kawarthas in Haliburton and Peterborough counties.

In addition to being a picturesque waterway the Trent and Severn watersheds cover an area of 7,200 square miles.

Operated from Peterborough, this system makes a major flood control area and contributes a considerable amount of power to the Central and Georgian Bay Divisions of the Hydro-Electric Power Commission of Ontario.

TRENT CANAL—MILEAGE AND GENERAL DATA

Miles from Trenton	Structure, Locality, etc.	Overhead Clearance		Locks				Canal prism
		Nor- mal	Least re- cord- ed	Length between hollow quoins	Mini- mum width	Normal draught	Average lift	
		ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	Miles
(Lake Ontario—Mean level, 245·8 above M.S.L.; Standard low water, 243·0 above M.S.L.)								
0·00	Entrance to Bay of Quinte.....							
0·00	Bridge 1—Dundas St., Trenton—High- way swing							
0·36	Bridge 2—Can. Nat. Rys.—Swing....							
0·86	Bridge 3—Can. Pac. Ry.—High level	43 4	40 1					0·75
1·74	Bridge 4—Can. Nat. Rys.—High level	30 6	27 3					
1·78	Trenton—Lock 1.....			175 0	33 0	8 0	17 7	
2·24	Bridge 4A—High level Highway.....	24 6	21 6½					
2·41	Trenton—Lock 2.....			175 0	33 0	8 0	20 0	
3·67	Bridge 5—Glen Miller—Highway swing							
3·85	Glen Miller—Lock 3.....			175 0	33 0	8 0	27 0	1·00
5·15	Township of Sidney—Lock 4.....			175 0	33 0	8 0	18 0	
6·38	Township of Sidney—Lock 5.....			175 0	33 0	8 0	18 0	0·25
7·26	Frankford—Lock 6.....			175 0	33 0	8 0	16 0	
7·56	Bridge 6—Frankford—Highway swing.							1·75
8·01	Emergency dam							
13·82	Glen Ross—Lock 7.....			175 0	33 0	8 0	10 0	0·50
13·85	Bridge 7—Glen Ross—Highway swing							
13·86	Emergency dam							
13·96	Bridge 8—Can. Nat. Rys. Swing							
25·26	Township of Seymour—Lock 8.....			175 0	33 0	8 0	19 7	1·25
26·41	“ “ “ 9.....			175 0	33 0	8 0	16 0	
27·99	“ “ “ 10.....			175 0	33 0	8 0	24 0	0·75
29·68	Ranney Falls—Locks 11 and 12 in flight			175 0	33 0	8 0	48 0	
29·74	Emergency dam							
29·75	Bridge 11—Highway swing							
30·69	Bridge 12—Can. Nat. Rys.—Bascule..							1·00
30·77	Bridge 13—Can. Nat. Rys.—High level	28 8	27 8					
31·13	Bridge 14—Campbellford—Highway bascule							
32·17	Township of Seymour—Lock 13.....			175 0	33 0	8 0	23 0	0·50
33·70	“ “ “ 14.....			175 0	33 0	8 0	25 0	
33·72	Emergency dam							
36·16	Heely Falls—Lock 15.....			175 0	33 0	8 0	21 9½	
36·18	Bridge 15—Highway swing							
36·51	Heely Falls—Locks 16 and 17 in flight..			175 0	33 0	8 0	54 0	1·00
36·56	Emergency dam							
37·11	Bridge 16—Heely Falls, Highway swing							
43·38	Bridge 17—Trent Bridge, Highway swing							
51·13	Hastings—Lock 18.....			175 0	33 0	8 0	9 0	
51·16	Bridge 18—Highway swing							
51·17	Emergency dam							
51·95	Bridge 19—Can. Nat. Rys.—swing							
57·00	Entrance to Rice Lake							
69·00	Mouth of Otonabee river							
76·53	Bridge 20—Bensfort—Highway swing							
80·35	Bridge 21—Wallace Point Highway swing							
88·74	Peterborough—Lock 19.....			134 0	33 0	6 0	8 0	
88·83	Bridge 22—Highway swing							
88·94	Bridge 23—Can. Nat. Rys.—Swing							
89·51	Peterborough—Lock 20.....			142 0	33 0	6 0	12 0	
89·61	Bridge 24—Maria St.—Swing							
89·72	Bridge 25—Can. Pac. Ry.—Swing							
90·10	Peterborough—Lock 21—Hydraulic lift.....			140 0	33 0	6 0	65 0	

TRENT CANAL—MILEAGE AND GENERAL DATA—Continued

Miles from Trenton	Structure, Locality, etc.	Overhead Clearance		Locks				Canal prism
		Normal	Least re- cord- ed	Length between hollow quoins	Mini- mum width	Normal draught	Average lift	
		ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	Miles
90-58	Bridge 26—Norwood Road—High level	23 8	22 9					
90-58	Guard gate							
91-01	Bridge 27—Warsaw Road—Highway							3-50
	swing.....							
91-01	Guard gate							
93-25	Guard gate—Nassau							
93-33	Bridge 28—Can. Nat. Rys.—Swing							
93-38	Bridge 29—Nassau—Highway Swing							
94-25	Township of Douro—Lock 22.....			142 0	33 0	6 0	14 0	0-25
94-84	“ “ 23.....			142 0	33 0	6 0	12 0	0-25
96-38	“ “ 24.....			142 0	33 0	6 0	12 0	0-25
97-29	“ “ 25.....			142 0	33 0	6 0	10 0	
98-72	Lakefield—Lock 26.....			142 0	33 0	6 0	15 8	
99-00	Bridge 30—Lakefield—High Level....	23 6	20 6					0-50
99-04	Guard Gate—Lakefield.....							
104-38	Bridge 31—Young's Point							
	High level.....	22 0	19 0					
104-47	Young's Point—Lock 27.....			175 0	33 0	8 10	7 3	
104-49	Guard Gate—Young's Point							
112-87	Burleigh Falls—Flight Lock 28.....			150 0	33 0	6 0-	24 0	
	“ “ 29.....			134 0	33 0	6 0-		
113-00	Bridge 32—Burleigh Falls—Highway							
	swing.....							
114-75	Lovesick—Lock 30.....			134 0	33 0	6 0	3 6	
120-66	Buckhorn—Lock 31.....			134 0	33 0	6 0	11 6	
120-66	Bridge 33—Buckhorn—Highway swing							0-25
132-68	Bridge 61—Bridgenorth, Chemong Lake—Rock Causeway with steel swing span					Branch (Chemong Lake)		
130-17	Bridge 34—Gannon's Narrows							
	High level.....	23 0	21 7					
138-17	Bridge 35—Bobcaygeon—Swing			175 0	33 0	6 0	5 5	0-25
138-21	Bobcaygeon—Lock 32.....							
138-23	Guard gate							
148-00	Sturgeon Point							
156-19	Bridge 65—Wellington Street, Lindsay —Highway bascule					Branch (Sturgeon Lake to Port Perry)		
156-31	Bridge 66—Lindsay Street—fixed.....	13 0		142 0	33 0	6 0	7 0	
156-35	Lindsay—Lock.....							
157-20	Bridge 67—Can. Nat. Rys.—High level	31 0	29 2					
157-87	Bridge 68—Ops—Highway fixed span...	10 0	8 6					
183-00	Port Perry							
153-61	Fenelon Falls—Flight Lock 33.....			150 0	33 0	6 0	23 7	0-50
	“ “ “ 34.....			134 0	33 0	6 0		
153-61	Bridge 36—Highway swing							
153-98	Bridge 37—Can. Nat. Rys.—Swing							
157-17	Rosedale—Lock 35.....			175 0	33 0	6 0	4 0	1-00
157-19	Emergency dam							
158-00	Bridge 38—Rosedale—Highway swing							
158-10	Entrance to Balsam Lake							
(Balsam Lake—Summit level, 841-0 above M.S.L.)								
163-91	Guard gate—Balsam Lake							
165-24	Bridge 39—Victoria Road—Highway							
	swing.....							
166-82	Bridge 40—Portage Road—High level	24 3	23 5					
167-88	Guard gate							
167-98	Bridge 41—Can. Nat. Rys.—High level	23 4	22 8					6-00
169-26	Guard gate—Kirkfield							
169-36	Kirkfield—Lock 36—Hydraulic lift....	24 10	24 1	140 0	33 0	6 0	49 0	

TRENT CANAL—MILEAGE AND GENERAL DATA—*Concluded*

Miles from Trenton	Structure, Locality, etc.	Overhead Clearance		Locks				Canal prism
		Normal	Least re- cord- ed	Length between hollow quoins	Mini- mum width	Normal draught	Average lift	
		ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	Miles
172-93	Bridge 42—High-level arch.....	28 1	26 6					
175-23	Bridge 43—Bolsover—Highway swing							
176-65	Bridge 44—Boundary Road—Highway swing							
177-04	Township of Thorah—Lock 37.....			142 0	33 0	6 0	21 8½	6-0
178-05	Township of Mara—Lock 38.....			142 0	33 0	6 0	14 0	
179-07	Bridge 46—Kane's—Highway swing							
179-63	Township of Thorah—Lock 39.....			142 0	33 0	6 0	13 0	
180-09	“ “ “ 40.....			142 0	33 0	6 0	14 0	3-0
180-74	“ “ “ 41.....			142 0	33 0	6 0	11 6	
180-79	Bridge 47—Gamebridge—Highway swing							
181-70	Bridge 48—Can. Nat. Rys.—High level	22 8	21 10					
181-85	Bridge 49—Can. Nat. Rys.—Swing							
182-15	Bridge 50—Lakeshore Road—Highway swing							
182-20	Entrance to Lake Simcoe							
(Lake Simcoe Level—718.3 above M.S.L.)								
197-56	Bridge 51—Atherley road—Highway swing							
197-66	Bridge 52—Can. Nat. Rys.—Atherley Narrows—Swing							
208-27	Bridge 54—Muskoka Road—High level.....	22 0	21 0					
209-14	Bridge 55—Can. Nat. Rys.—Washago Swing							
209-87	Guard Gate—Couchiching							
209-89	Couchiching—Lock 42.....			175 0	33 0	7 0	20 3	3-0
209-90	Bridge 56—Couchiching—Highway high-level.....	31 0	28 7					
212-73	Bridge 57—Hamlet—Highway swing							
222-40	Bridge 58—Can. Nat. Rys.—Ragged Rapids—High-level.....	34 0	32 8					
224-45	Swift Rapids Marine Railway.....			(60 0	13 6	4 0)	47 0	
228-07	Bridge 59—Can. Pac. Ry.—Severn Falls—High level.....	33 7	33 2					
232-45	Big Chute—Marine Railway.....			(60 0	13 6	4 0)	58 0	
240-55	Port Severn—Lock.....			100 0	25 0	6 0	12 0	
240-55	Bridge 60—Port Severn—Highway swing							
240-56	Entrance to Georgian Bay							
(Lake Huron—Mean Level, 580.6 above M.S.L. Standard low water 578.5 above M.S.L.)								
	Total.....							33-25

The depth of water on lock sills varies with prevailing water levels. The depths at locks opening on Lake Ontario, Lake Simcoe and Georgian Bay have been as low as the following during the navigation season:—

Lock 1, Trenton.....7'4" on October 28, 1934.
 Lock 41, Gamebridge.....7'0" on August 30, 1941.
 Lock 42, Couchiching.....7'8" on October 17, 1929.
 Lock at Port Severn.....6'2" on August 21, 1926.

NEW NAVIGATION CHARTS

The Department of Transport issues navigation charts for the Trent Canal. The following table indicates the scale, the price and the section of the canal covered by each chart. Charts may be ordered from and are for sale at Trent Canal Offices, P.O. Box 567, Federal Building, Charlotte Street, PETERBOROUGH, Ontario. Charts are also available for direct sale at the following stations:—Bridgemaster's Office, Brighton Road Bridge, Murray Canal; Lockmaster, Lock No. 1, Trenton, Ontario; Trent Canal Office, Washago, Ontario; Lockmaster, Port Severn Lock, Port Severn, Ontario.

No. 2010	—General Chart. Bay of Quinte to Georgian Bay. Scale 1 in. = 4 miles	Price \$1.00
No. 2011	—Bay of Quinte to Rice Lake. Scale 1 in. = 3000 ft.	Price \$1.00
No. 2012	—Rice Lake to Buckhorn Lake. Scale 1 in. = 3000 ft.	Price \$1.00
No. 2013	—Buckhorn Lake to Lake Simcoe. Scale 1 in. = 3000 ft.	Price \$1.00
No. 2014	—Lake Simcoe to Georgian Bay. Scale 1 in. = 3000 ft.	Price \$1.00
No. 2015	—Lake Simcoe Scale 1 in. = 1 Statute mile	Price \$1.00

In Canada, remittance should be made by MONEY ORDER or ACCEPTED CHEQUE, Payable to the RECEIVER GENERAL OF CANADA.

From United States, remittance should be made by United States Postal Money Order payable in Canadian Funds, to the RECEIVER GENERAL OF CANADA.

Those desirous of having charts sent "Special Delivery" or "Registered" to addresses in Canada or the U.S.A. must remit an extra amount of 62 cents to cover First Class Mail, plus 20 cents for registration and/or 10 cents for special delivery.

